

Notice of Allowability

Application No.

09/620,544

Applicant(s)

ESTAKHRI ET AL.

Examiner

Art Unit

Reginald G. Bragdon

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the telephone interview of 27 April 2005.
2. ☒ The allowed claim(s) is/are 2-17 renumbered 1-16.
3. ☒ The drawings filed on 30 July 2004 and 21 Sept 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Maryam Imam (#38,190) on 26 April 2005.

2. The application has been amended as follows:

In the Specification:

Replace the paragraph under "Cross Reference to Related Application" on page 1 with the following:

--This application is a continuation of prior U.S. application serial no. 09/264,340, filed March 8, 1999, now U.S. Patent 6,145,051, which is a continuation of prior U.S. application serial no. 08/831,266, filed March 31, 1997, now U.S. Patent 5,907,856, which is a continuation-in-part of prior U.S. application serial no. 08/509,706, filed July 31, 1995, now U.S. Patent 5,843,313. Applications 08/831,266 and 08/509,706 are incorporated herein by reference.--

In the Claims:

Claim 2 (currently amended) A nonvolatile storage system comprising:

a controller capable of receiving commands from a host; and

a nonvolatile memory storage coupled to said controller, said nonvolatile memory storage organized into blocks, [one or more blocks caused to be] a first block identified by a first group of logical block addresses corresponding to a predetermined group of sectors, each sector for including a sector of data and each block storing two or more sectors of data,

wherein said controller, in response to receiving a command from said host to rewrite one or more sectors of data that are stored in [one or more blocks] said first block, writes said one or more sectors of data [for said one or more sectors of data to be rewritten] to one or more new blocks caused to be identified by said first group of logical block addresses.

Claim 3 (currently amended) A nonvolatile storage system comprising:

a host for sending commands;

a controller coupled to said host for receiving host commands; and

a nonvolatile memory storage, coupled to said controller, for storing sectors of data into sectors, said nonvolatile memory storage organized into blocks, [one or more blocks caused to be] a first block identified by a first group of logical block addresses corresponding to a predetermined group of sectors, and each block storing two or more sectors of data,

wherein said controller receives a command from said host for writing updated one or more sectors of data into a location within the nonvolatile memory storage, said location defined by one or more blocks having previously-written sectors of data, and wherein said controller writes said updated one or more sectors of data into one or more new blocks caused to be identified by said first group of logical block addresses.

Art Unit: 2188

Claim 4 (previously presented) A nonvolatile storage system as recited in claim 3 wherein the controller further receives additional commands from the host for further writing, one or more times, sectors of data without moving the previously-written sectors of data every time sectors of data are updated.

Claim 5 (currently amended) A nonvolatile storage system as recited in claim 3 wherein the previously-written sectors of data in the first block which are not updated are moved [said one or more blocks having previously-written sectors] at a time later than when the controller writes said updated one or more sectors of data to said one or more new blocks.

Claim 6 (currently amended) A nonvolatile storage system as recited in claim 5 wherein said [one or more blocks] first block [having previously-written sectors] is erased at a time later than when the previously-written sectors of data in the first block which are not updated are moved from said first block [one or more blocks having previously-written sectors of data].

Claim 7 (currently amended) A nonvolatile storage system comprising:

- a host for sending commands;

- a controller coupled to said host for receiving host commands; and

- a nonvolatile memory storage coupled to said controller for storing a sector of data, said nonvolatile memory storage organized into blocks, each block having two or more sectors for storing sectors of data, [one or more blocks caused to be] a first block identified by a first group

Art Unit: 2188

of logical block addresses corresponding to a predetermined group of sectors, [and each block storing two or more sectors of data,]

wherein said controller receives a command from said host for writing updated one or more, but not all, sectors of data into a location within the nonvolatile memory storage, said location defined by one or more blocks having previously-written sectors of data, and wherein said controller writes said updated one or more sectors of data into one or more new blocks caused to be identified by said first group of logical block addresses.

Claim 8 (previously presented) A nonvolatile storage system as recited in claim 7 wherein the controller further receives additional commands from the host for further writing, one or more times, one or more sectors of data without moving the previously-written sectors of data every time the one or more sectors of data are updated.

Claim 9 (currently amended) A nonvolatile storage system as recited in claim 7 wherein the previously-written sectors of data in the first block which are not updated are moved [from the one or more blocks having previously-written sectors] at a time later than when the controller writes said updated one or more sectors of data to said one or more new blocks.

Claim 10 (currently amended) A nonvolatile storage system as recited in claim 9 wherein the [one or more blocks] first block [having previously-written sectors] is erased at a time later than when the previously-written sectors of data in the first block which are not updated are moved from the first block [one or more blocks having previously-written sectors of data].

Claim 11 (currently amended) A method of updating information in a nonvolatile memory storage having a controller coupled to a host and the nonvolatile memory storage comprising:

receiving a command from the host for updating one or more sectors of data into a location within the nonvolatile memory storage, said location defined by a particular block having previously-written one or more sectors of data, said particular block caused to be identified by a first group of logical block addresses, corresponding to a predetermined group of sectors, and including two or more sectors of data, each sector for storing a sector of data;

selecting one or more new blocks within the nonvolatile storage; and

writing said updated one or more sectors of data to one or more new blocks caused to be identified by said first group of logical block addresses without moving and without copying the previously-written sectors of data in the particular block that are not updated.

Claim 12 (currently amended) A method of updating information as recited in claim 11 further including the step of receiving additional commands from the host for further updating, one or more times, sectors of data wherein the previously-written sectors of data [is] in the particular block are not moved every time a sector of data [are] is updated.

Claim 13 (currently amended) A method of updating information as recited in claim 11 further including the step of moving the previously-written sectors of data which are not updated from the particular block at a time later than said writing step.

Art Unit: 2188

Claim 14 (previously presented) A method of updating information as recited in claim 13 further including erasing the particular block at a time later than said moving step.

Claim 15 (currently amended) A nonvolatile storage system comprising:

a controller capable of receiving commands from a host; and

a nonvolatile memory storage, coupled to said controller, said nonvolatile memory storage organized into blocks, each block having two or more sectors, each sector for storing a sector of data,

wherein said controller, in response to receiving a first write command from the host to rewrite a first sector of data [defined by one or more sectors of data that are] stored in a particular block, said particular block [caused to be] identified by a first group of logical block addresses[,] corresponding to a predetermined group of sectors, and including two or more sectors, writes said first sector of data to one or more new blocks, said one or more new blocks caused to be identified by said first group of logical block addresses, without moving and without copying sectors of data previously-stored in the sectors of the particular block and not specified by the host in the command to be rewritten, said controller, in response to receiving a second write command from the host to rewrite a second sector of data defined by a sector of data within the particular block that is other than the first sector of data, rewrites the second sector of data into the one or more new blocks without moving the first sector of data thereby preventing moving a sector of data every time a write command is received from the host.

Claim 16 (currently amended) A nonvolatile storage system comprising:

Art Unit: 2188

a controller coupled to a host for receiving host commands; and

nonvolatile memory storage coupled to said controller and organized into blocks having one or more sectors for storing sectors of data, [one or more blocks] a first block identified by a [predetermined] first group of logical block addresses corresponding to a predetermined group of sectors having stored therein previously-written sectors of data, said controller receiving a host command for writing updated one or more, but not all, sectors of data associated with said [predetermined group of sectors] first block into a location within the nonvolatile memory storage [defined by said one or more blocks], said controller writing said updated one or more sectors of data to one or more new blocks caused to be identified by said first group of logical block addresses and upon receiving a subsequent command to write subsequent sectors of data associated with said first [group of a sectors] block but that are other than the updated one or more sectors of data, the controller writing said subsequent sectors of data to one or more new blocks and only moving at a later time the previously-written sectors of data in the first block if the previously-written sectors of data are not updated.

Claim 17 (currently amended) A nonvolatile storage system comprising:

a controller coupled to a host for receiving host commands; and

nonvolatile memory storage coupled to said controller and organized into blocks having sectors of data, [one or more blocks] a first block identified by a [predetermined] first group of logical block addresses corresponding to a predetermined [first] group of sectors having stored therein previously-written data, said controller receiving a host command for writing updated one or more, but not all, data associated with said first [group of sectors] block into a location

Art Unit: 2188

within the nonvolatile memory storage [defined by said one or more blocks], said controller writing said updated one or more data to one or more new blocks caused to be identified by said first group of logical block addresses and upon receiving a subsequent command to write subsequent sectors of data associated with said first [group of a sectors] block but that are other than the updated one or more data, the controller writing said subsequent data to one or more new blocks and only moving at a later time the previously-written data in the first block if the previously-written data are not updated.

3. The following is an examiner's statement of reasons for allowance:

Hasbun et al. teaches updating the sector header translation table by updating (changing) the physical sector address associated with a logical sector address. See column 17, lines 17-20. However, there is no teaching in Hasbun et al. of causing the one or more new physical blocks to which the one or more sectors of data has been rewritten to be identified by a first group of logical block addresses. Instead, in Hasbun et al., each physical location to which a sector of data has been rewritten is caused to be identified by only one logical sector address (not a first group of logical block addresses).

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2188

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reginald G. Bragdon whose telephone number is (571) 272-4204. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and every other Friday from 7:00 AM to 3:30 PM.

The examiner's supervisor, Mano Padmanabhan, can be reached at (571) 272-4210.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

RGB
April 27, 2005

Reginald G. Bragdon
Reginald G. Bragdon
Primary Patent Examiner
Art Unit 2188